

Attorney Docket No. 9286.7  
Application Serial No.: 10/019,902  
Filed: July 2, 2002  
Page 17 of 20

RECEIVED  
CENTRAL FAX CENTER  
JAN 05 2007

### REMARKS

Claims 1-6, 9-12, 14-16, 18, 20, 23, 27 and 28 are pending in this application. Claims 1, 3, 6, 9, 10, 12, 15, 18, 23, 27 and 28 are amended herein for clarity and to more particularly define the invention. Support for these amendments is found throughout the specification and in the language of the original claims, as set forth below. No new matter is added by these amendments and their entry and consideration are respectfully requested. In light of these amendments and the following remarks, applicants respectfully request reconsideration of this application and allowance of the pending claims to issue.

#### I. Rejection under 35 U.S. § 102(b).

The Action states that claims 1-5, 10-12, 14-16, 23, 27 and 28 are rejected under 35 U.S. § 102(b) as allegedly being anticipated by Unverzagt et al. (*Carbohydrate Res.* 251:285-301 (1994)). Specifically, the Action states that Unverzagt et al. discloses multivalent glycopeptides consistent in structure with formula I.

Claims 1, 3, 10, 12, 15, 18, 23, 27 and 28 are amended herein to recite that *m* is 3 or 4. Support for these amendments can be found throughout the specification and language of the original claims, at least, for example in original claims 1 and 4, on page 11 and in Example 5. Thus, as amended herein, the present invention teaches trivalent and tetravalent peptides. Unverzagt et al. discusses divalent sialoglycopeptides and fails to teach or suggest higher valent sialoglycopeptides or methods for their preparation as claimed in the present invention (*See*, Unverzagt et al., for example, at least, Table 1, page 298). Furthermore, the procedures for preparing the divalent sialoglycopeptides described in Unverzagt et al. could not be used to prepare higher valent sialoglycopeptides such as those taught in the present invention. Accordingly, applicants respectfully submit that claims 1-5, 10-12, 14-16, 23, 27 and 28 are novel over Unverzagt et al. and respectfully request that this rejection be withdrawn.

Attorney Docket No. 9286.7

Application Serial No.: 10/019,902

Filed: July 2, 2002

Page 18 of 20

## **II. Rejection under 35 U.S. § 103(a).**

A. The Action states that claims 1-5, 10-12, 14-16, 18, 20, 23, 27 and 28 are rejected under 35 U.S. § 103(a) as allegedly being unpatentable over Unverzagt et al. Specifically, the Action states that Unverzagt et al. discloses multivalent glycopeptides consistent in structure with formula I. The Action further alleges that the reference teaches that these compounds inhibit the binding of influenza virus to cells. Finally, the Action alleges that Unverzagt et al. suggests but does not disclose treatment of influenza. The Action then concludes that it would have been obvious to one having ordinary skill in the art at the time the invention was made to administer the disclosed compounds for treatment of influenza.

As discussed above, Claims 1, 3, 10, 12, 15, 18, 23, 27 and 28 are amended to recite that *m* is 3 or 4. Unverzagt et al. discusses divalent sialoglycopeptides and fails to teach or suggest higher valent sialoglycopeptides or methods for their preparation as claimed in the present invention. Accordingly, applicants respectfully submit that claims 1, 3, 10, 12, 15, 18, 23, 27 and 28 are patentable over Unverzagt et al. and respectfully request that this rejection be withdrawn.

B. The Action states that claims 1-5, 10-12, 14-16, 18, 20, 23, 27 and 28 are rejected under 35 U.S. § 103(a) as allegedly being unpatentable over Unverzagt et al. in view of Mammen et al. (*Agnew. Chem. Int. Ed.*, 37:2754-2794 (1998)). Specifically, the Action states that Unverzagt et al. discloses multivalent glycopeptides consistent in structure with formula I. The Action concedes that Unverzagt et al. fails to teach the full range of saccharide "R" groups or the treatment of the full range of diseases recited. However, the Action alleges that the use of multivalent saccharide compounds for the treatment of a variety of diseases is known in the art, as reviewed by Mammen et al. On this basis the Action concludes that it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the compounds of Unverzagt et al. by substitution of the saccharide moieties for others known to be useful in the art, as discussed in Mammen et al.

Attorney Docket No. 9286.7  
Application Serial No.: 10/019,902  
Filed: July 2, 2002  
Page 19 of 20

As discussed above, claims 1, 3, 10, 12, 15, 18, 23, 27 and 28 recite that  $m$  is 3 or 4. Unverzagt et al. discusses divalent sialoglycopeptides and fails to teach or suggest higher valent sialoglycopeptides or methods for their preparation as claimed in the present invention.

Further, Mammen et al. fails to remedy the deficiencies of Unverzagt et al. Mammen et al. is a review article that is limited to theoretical considerations. This review article discusses polyvalent interactions in biological systems and mentions polyvalent inhibitors of influenza virus (Mammen et al, Chapter 5.2.1). However, as discussed on pages 1-3 of the instant specification, the multivalent inhibitors known in the art at the time of the present invention and as discussed in Mammen et al. have severe drawbacks with regard to therapeutic use. For example, the inhibitors discussed in Mammen et al., including the polyacrylamides, are described as producing a wide range of metabolites that are potentially toxic. (Mammen et al., page 2780 column 2, first full paragraph; Present Specification, page 2). Thus, the disclosure in Mammen et al. is limited to inhibitors that are problematic for therapeutic applications.

Accordingly, Unverzagt et al., alone or in combination with Mammen et al., fails to teach or suggest the subject matter of the present invention or the principle of dynamic coupling as described for the first time by the applicants. Thus, applicants respectfully submit that claims 1-5, 10-12, 14-16, 18, 20, 23, 27 and 28 are patentable over Unverzagt et al. and respectfully request this rejection be withdrawn.

### **III. Allowable subject matter.**

Applicants note with appreciation that the Action states that claims 6 and 9 are allowable if written in independent form including all of the limitations of the base claim and any intervening claims. Office Action, page 4.

Claims 6 and 9 are amended herein to be in independent form, thereby rendering them allowable, which action is respectfully requested.

Having addressed all of the issues raised by the Examiner in the present Action, applicants respectfully request the withdrawal of the pending rejections and allowance of the

Attorney Docket No. 9286.7  
Application Serial No.: 10/019,902  
Filed: July 2, 2002  
Page 20 of 20

RECEIVED  
CENTRAL FAX CENTER  
JAN 05 2007

pending claims to issue. The Examiner is invited and encouraged to contact the undersigned directly if such contact will expedite the prosecution of this application to allowance.

The Commissioner is authorized to charge Deposit Account No. 50-0220 in the amount of \$120 as the fee for a one-month extension of time. This amount is believed to be correct. However, the Commissioner is hereby authorized to charge any deficiency or credit any overpayment to Deposit Account No. 50-0220.

Respectfully submitted,



Mary L. Miller

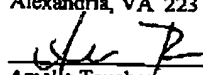
Registration No. 39,303

USPTO Customer No. 20792  
Myers Bigel Sibley & Sajovec, P.A.  
Post Office Box 37428  
Raleigh, NC 27627  
Telephone (919) 854-1400  
Facsimile (919) 854-1401

CERTIFICATE OF FACSIMILE

TRANSMISSION UNDER 37 CFR § 1.8

I hereby certify that this correspondence is being sent by facsimile transmission to central facsimile number 571-273-8300 at the U.S. Patent and Trademark Office, Mail Stop Amendment, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450, on January 5, 2007.

  
Amelia Tauchen

Date of Signature: January 5, 2007